Physical Sciences Informatics (PSI)

NASA Research Announcement (NRA) Proposers' Conference

January 26, 2016

Meeting Agenda

Topic	Presenter
Physical Sciences Program Overview	Dr. Francis Chiaramonte, NASA HQ
NRA “Use of the NASA Physical Sciences Informatics System - Appendix B”	Harri Vanhala, NASA HQ
Q&A session	Open discussion
Requesting access	Cheryl Payne, NASA MSFC
PSI system demo	Cheryl Payne, NASA MSFC
Q&A session	Open discussion

FOR ATTENDEES:

- All attendee phones will be muted by the meeting host to minimize background noise.
- All attendee phones will be unmuted during the Q&A sessions.
- Please ask questions anytime during the presentation by using the Chat feature in WebEx. Questions will be addressed during Q&A.

Physical Sciences Overview

Francis Chiaramonte
Program Scientist for Physical Sciences
January 26, 2016

SLPS Gravity-Dependent Physical Sciences Research

Biophysics

- Biological macromolecules
- Biomaterials
- Biological physics
- Fluids for Biology

Combustion Science

- Spacecraft fire safety
- Droplets
- Gaseous – Premixed and Non-Premixed
- Solid Fuels
- Supercritical reacting fluids

Fluid Physics

- Adiabatic two-phase flow
- Boiling, Condensation
- Capillary Flow
- Interfacial phenomena
- Cryogenics

Materials Science

- Metals
- Semiconductors
- Polymers
- Glasses, Ceramics
- Granular Materials
- Composites
- Organics

Fundamental Physics

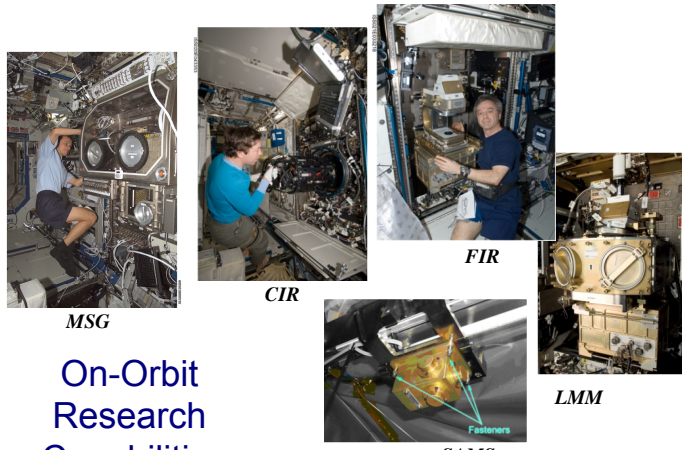
- Space Optical/Atomic Clocks
- Quantum test of Equivalence Principle
- Cold atom physics
- Critical point phenomena
- Dusty plasmas

Complex Fluids

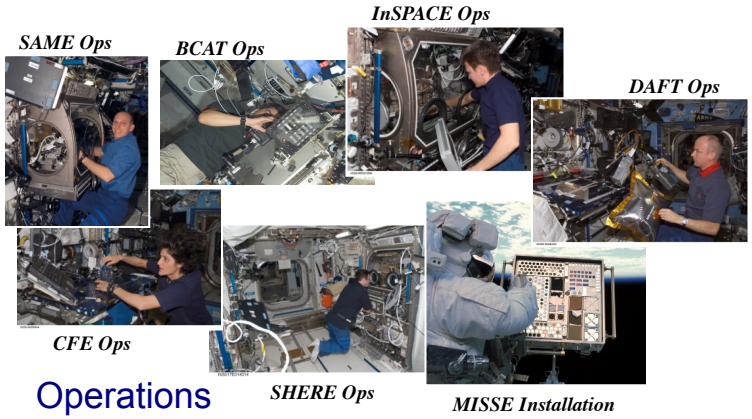
- Colloids
- Liquid crystals
- Foams
- Gels
- Granular flows

ISS Research at GRC

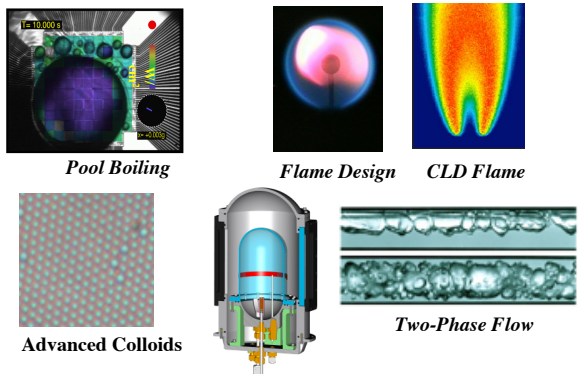
Ground-Based Research Facilities



On-Orbit Research Capabilities



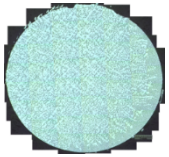
Operations



Science

ISS Research at MSFC

Payload Operations Integration Center



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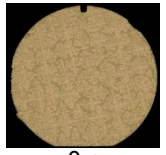

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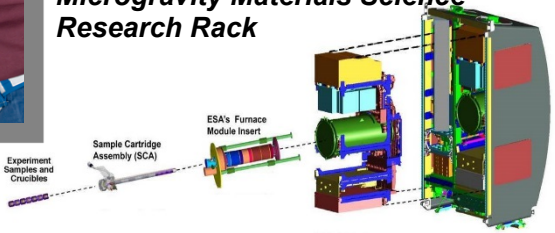
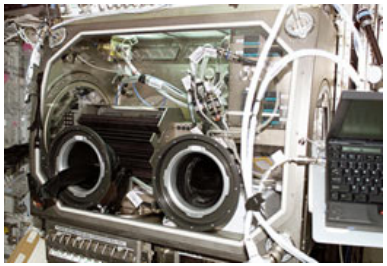
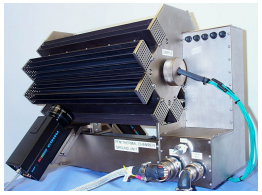
MICAST

Micrograviy Materials Science Research Rack

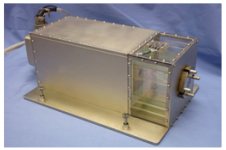


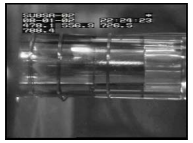


Microgravity Science Glovebox



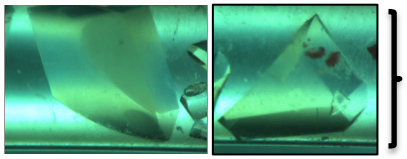
PFMI





SUBSA

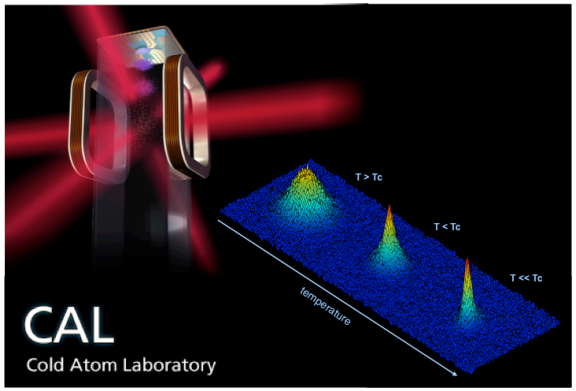
ISSI



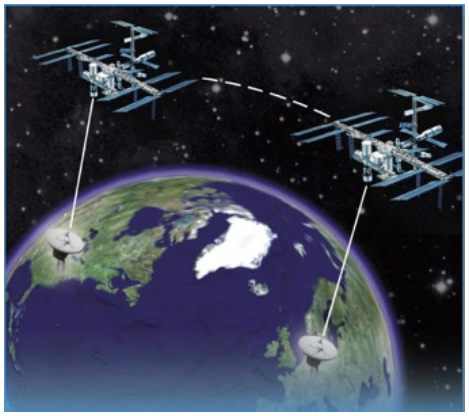
Large volume, ISS grown, protein crystals

DECLIC – Transparent Alloy Solidification

ISS Research at JPL

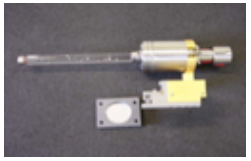


Cold Atom Lab



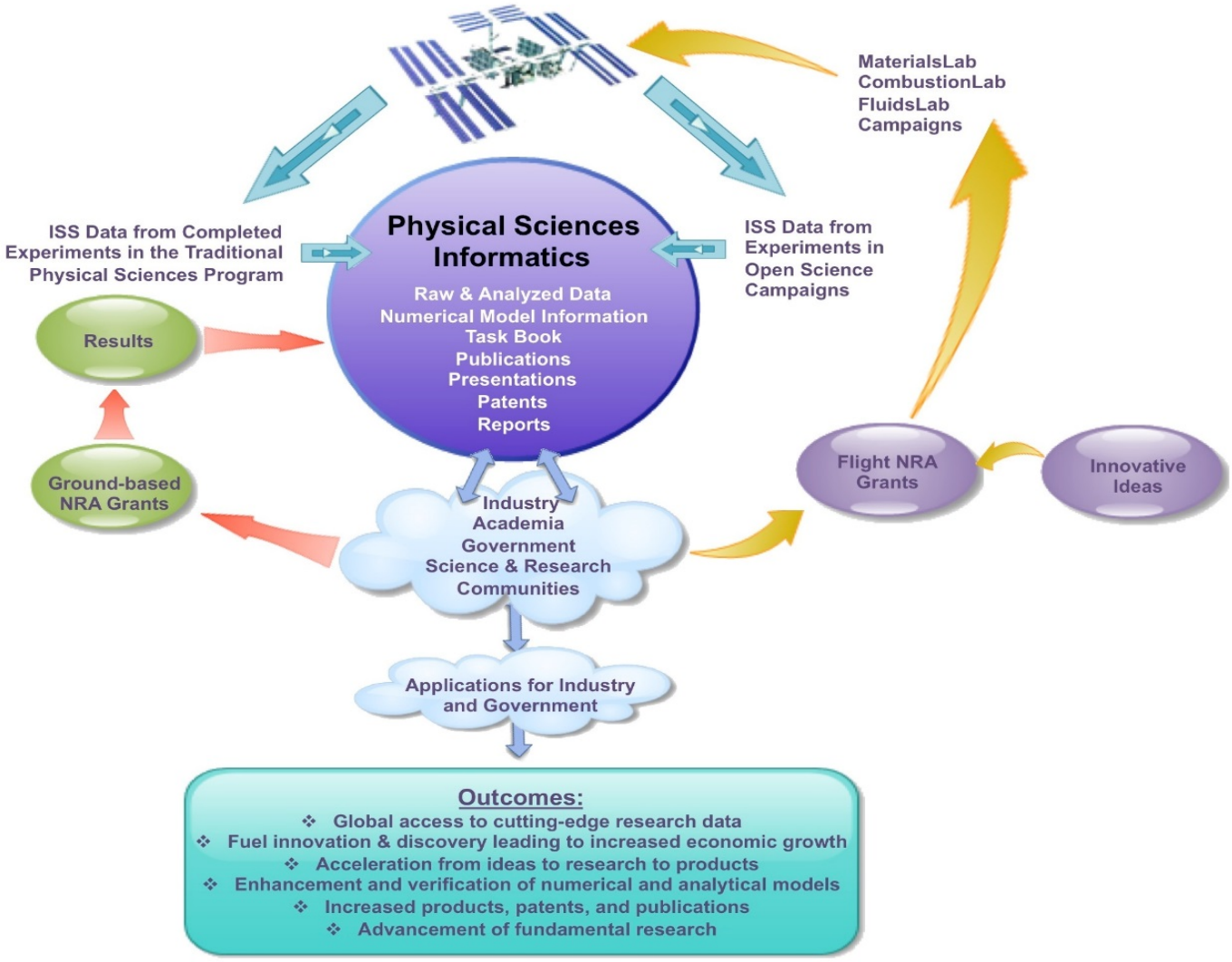
Atomic Clock Ensemble in Space

PK – 4 (dusty plasma)



DECLIC – Critical Point Phenomena

Physical Sciences - Open Science Vision



PSI - Physical Sciences Informatics System

At NASA, we are excited to announce the Physical Science Informatics (PSI) System, a data repository for physical science experiments performed on the International Space Station (ISS). The PSI system is accessible and open to the public thus fulfilling the President's Open Data Policy. The website is: http://psi.nasa.gov

"The resulting data from that envelope of experiments will then be used to create experimental informatics libraries that will support many more investigators and funded ISS-derived research. What that does is, it converts what would be normally a single [Principal Investigator] PI research opportunity into multiple PI research opportunities now and into the future". Marshall Porterfield, Space Life and Physical Sciences Director.

PSI NRA Release Dates: History and Plan

PSI NRA Appendix A – Released on June 4, 2015

PSI NRA Appendix B – Released on Jan.19, 2016

PSI NRA Appendix C – Target release date: Sept.15, 2016

PSI NRA Appendix D – Target release date: Sept.15, 2018

PSI NRA Appendix E – Target release date: Sept.15, 2020

This repeats every two years……

NASA Research Announcement (NRA)

Use of the NASA Physical Sciences Informatics System

Appendix B

Harri Vanhala, NASA HQ

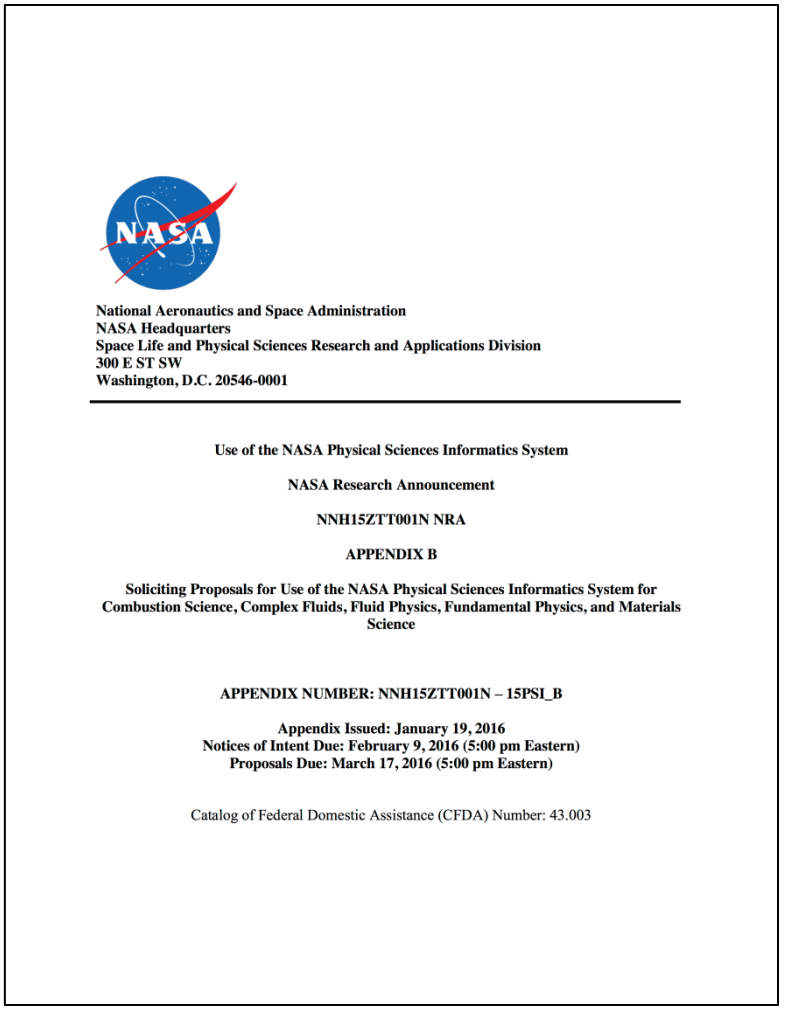
PSI NRA Appendix B: Key Information

Key dates:

01/19/2016	NRA Appendix B Released
01/26/2016	Conduct Proposers' Conference
02/09/2016	Notices of Intent Due
03/17/2016	Proposals Due
05/27/2016	Target: Announce Selections

Award Information:

- Typical award: $75,000 – $100,000 /year, for a total maximum award of up to $200,000 for a two-year period.
- Proposals of exceptionally high scientific and technical merit may be considered for up to $125,000 /year, for a total maximum of up to $250,000 for a two-year period.
- Expected number of selections: 10



National Aeronautics and Space Administration
NASA Headquarters
Space Life and Physical Sciences Research and Applications Division
300 E ST SW
Washington, D.C. 20546-0001

Use of the NASA Physical Sciences Informatics System

NASA Research Announcement

NNH15ZTT001N NRA

APPENDIX B

Soliciting Proposals for Use of the NASA Physical Sciences Informatics System for Combustion Science, Complex Fluids, Fluid Physics, Fundamental Physics, and Materials Science

APPENDIX NUMBER: NNH15ZTT001N – 15PSI_B

Appendix Issued: January 19, 2016
Notices of Intent Due: February 9, 2016 (5:00 pm Eastern)
Proposals Due: March 17, 2016 (5:00 pm Eastern)

Catalog of Federal Domestic Assistance (CFDA) Number: 43.003

PSI NRA Appendix B: Goal and Eligibility

Goal and Requirement: The Use of PSI Data:

- The NRA solicits ground-based research proposals – both experimental and numerical studies – utilizing experimental data residing in the PSI.
- Proposers **must review** the data in the PSI system before preparing their proposal. The proposal must clearly demonstrate how the PSI data will be used in the project.
- Prior to the submission of the proposal, it is highly recommended that the proposers take at least one representative sample set of PSI data to perform numerical modeling or sample experiments and present the findings as part of the proposal.

Eligibility:

1) Established researchers from all categories of U.S. and non-U.S. organizations, including educational institutions, industry, nonprofit organizations, NASA Centers and other Government agencies
2) Graduate students (with advisors) from accredited U.S. postsecondary institutions and programs.
   - Note: proposals from graduate students must be submitted by their advisor.

PSI NRA Appendix B: Research Areas and Eligible Investigations

Research Area	Investigation
Combustion Science	DAFT (Dust and Aerosol Measurement Feasibility Test)
Combustion Science	DAFT-2 (Dust and Aerosol Measurement Feasibility Test-2)
Combustion Science	FLEX (Flame Extinguishment Experiment)
Combustion Science	SAME (Smoke Aerosol Measurement Experiment)
Combustion Science	SAME-R (Smoke Aerosol Measurement Experiment Reflight)
Combustion Science	SPICE (Smoke Point in Coflow Experiment)
Complex Fluids	ACE-M1 (Advanced Colloids Experiment-Microscopy – 1) *
Complex Fluids	BCAT-3 (Binary Colloidal Alloy Test – 3)
Complex Fluids	BCAT-4 (Binary Colloidal Alloy Test – 4)
Complex Fluids	BCAT-5 (Binary Colloidal Alloy Test – 5)
Complex Fluids	BCAT-6 (Binary Colloidal Alloy Test – 6)
Complex Fluids	InSPACE-3 (Investigating the Structure of Paramagnetic Aggregates from Colloidal Ellipsoids–3)
Complex Fluids	InSPACE-3+ (Investigating the Structure of Paramagnetic Aggregates from Colloidal Ellipsoids–3+)
Complex Fluids	PHaSE (Physics of Hard Spheres Experiment)
Complex Fluids	SHERE (Shear History Extensional Rheology Experiment)
Complex Fluids	SHERE II (Shear History Extensional Rheology Experiment II)
Complex Fluids	SHERE-R (Shear History Extensional Rheology Experiment Reflight)
Fluid Physics	CCF (Capillary Channel Flow)
Fluid Physics	CFE (Capillary Flow Experiment)
Fluid Physics	CVB (Constrained Vapor Bubble)
Fluid Physics	MABE (Microheater Array Heater Boiling Experiment)
Fluid Physics	NPBX (Nucleate Pool Boiling Experiment)
Fundamental Physics	GRADFLEX (Gradient Driven Fluctuation Experiment)
Materials Science	CSLM (Coarsening in Solid-Liquid Mixtures)
Materials Science	CSLM-2 (Coarsening in Solid-Liquid Mixtures – 2)
Materials Science	CSLM-2R (Coarsening in Solid-Liquid Mixtures – 2 Reflight)
Materials Science	CSLM-3 (Coarsening in Solid-Liquid Mixtures – 3)
Materials Science	ISSI (In-Space Soldering Investigation)
Materials Science	PFMI (Pore Formation and Mobility Investigation)

*PSI data for ACE-M1 is currently very limited; complete data will be available in July 2016.

PSI NRA Appendix B: NOI and Proposal Submission

Notices of Intent (NOI)

- Submission of a brief NOI is highly recommended.
- Use NSPIRES (http://nspires.nasaprs.com) to submit your NOI.
- See Section IV.B.2 of Appendix B for details.
- **NOIs are due by 5:00 p.m. Eastern Time on February 9, 2016.**

Full Proposals

- The full proposal must include all required components listed in Table 2 of Appendix B (page 12).
- Maximum length of Scientific/Technical Project Description: 10 pages.
- You may use NSPIRES (http://nspires.nasaprs.com) or Grants.gov (http://www.grants.gov/) to submit your proposal. (But remember that regardless of the system used, *all proposers, team members, and agency officials must be registered with NSPIRES before proposal submission*.)
- See Section IV.B.3 of Appendix B for details.
- **Full proposals are due by 5:00 p.m. Eastern Time on March 17, 2016.**

PSI NRA Appendix B: Proposal Evaluation

- All proposals will be prescreened for compliance with requirements of this solicitation. Non-compliant proposals may be withdrawn from the review process and declined without further review.

- Compliant proposals will undergo a comprehensive review which includes evaluation of factors such as:
  - Intrinsic scientific/technical merit of the proposal (merit evaluation criteria described on the next slide)
  - Relevance to NASA's Human Exploration and Operations Mission Directorate (HEOMD)
  - Programmatic balance
  - Cost of the proposed work

- The most important factor in the evaluation is the intrinsic scientific/technical merit, but programmatic relevance/balance and available funds are all taken into consideration when making final selections.

PSI NRA Appendix B: Intrinsic Scientific/ Technical Merit Evaluation Criteria

1) *Effective use of the Physical Sciences Informatics system*: How well do the investigators utilize the experimental data contained in the PSI system to meet the research goals stated in the proposal? How well does the use of this data advance research in the chosen research area?
2) *For* **Graduate Student proposals** *only*: *Academic benefit*: How well does the proposed research benefit the advancement of the student's education and achieving their advanced degree?
3) *Significance*: Does this study address an important problem? If the aims of the application are achieved, how well will scientific knowledge or technology be advanced?
4) *Approach*: Are the conceptual framework, proposed methods, and analysis techniques adequately developed, well integrated, and appropriate to the aims of the project? Is the proposed approach likely to yield the desired results within the specified timeframe? Does the project employ contemporary methods, concepts or approaches? Does the Data Management Plan meet NASA requirements?
5) *Investigators*: Are the investigators appropriately trained and well suited to carry out this work? Is the work proposed appropriate to the experience level of the investigators?
6) *Environment*: Does the scientific environment in which the work will be performed contribute to the probability of success? Is there evidence of institutional support?

Questions?

1. Chat questions
2. Phone questions

Key Dates:

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05/27/2016	Target: Announce Selections

http://psi.nasa.gov

- Request Access
- System Demo

Cheryl Payne, NASA MSFC

Questions?

1. Chat questions
2. Phone questions

Contacts:

Fran Chiaramonte – 202-358-0693 – francis.p.chiaramonte@nasa.gov

Cheryl Payne – 256-544-1667 – maptissupport@mail.nasa.gov

NSPIRES Help Desk – 202-479-9376 – nspires-help@nasaprs.com

Key Dates:

01/19/2016	NRA Appendix B Released
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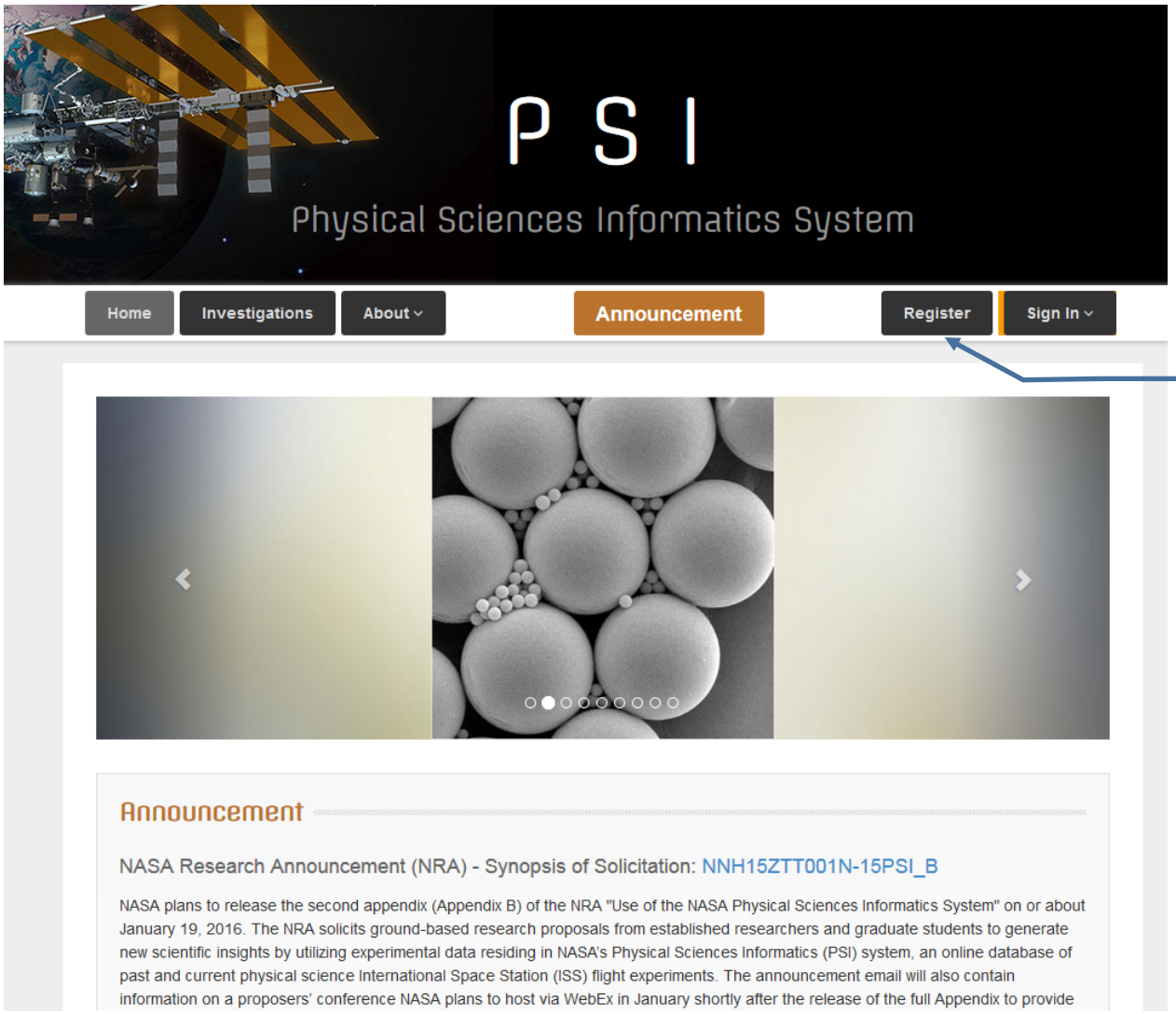
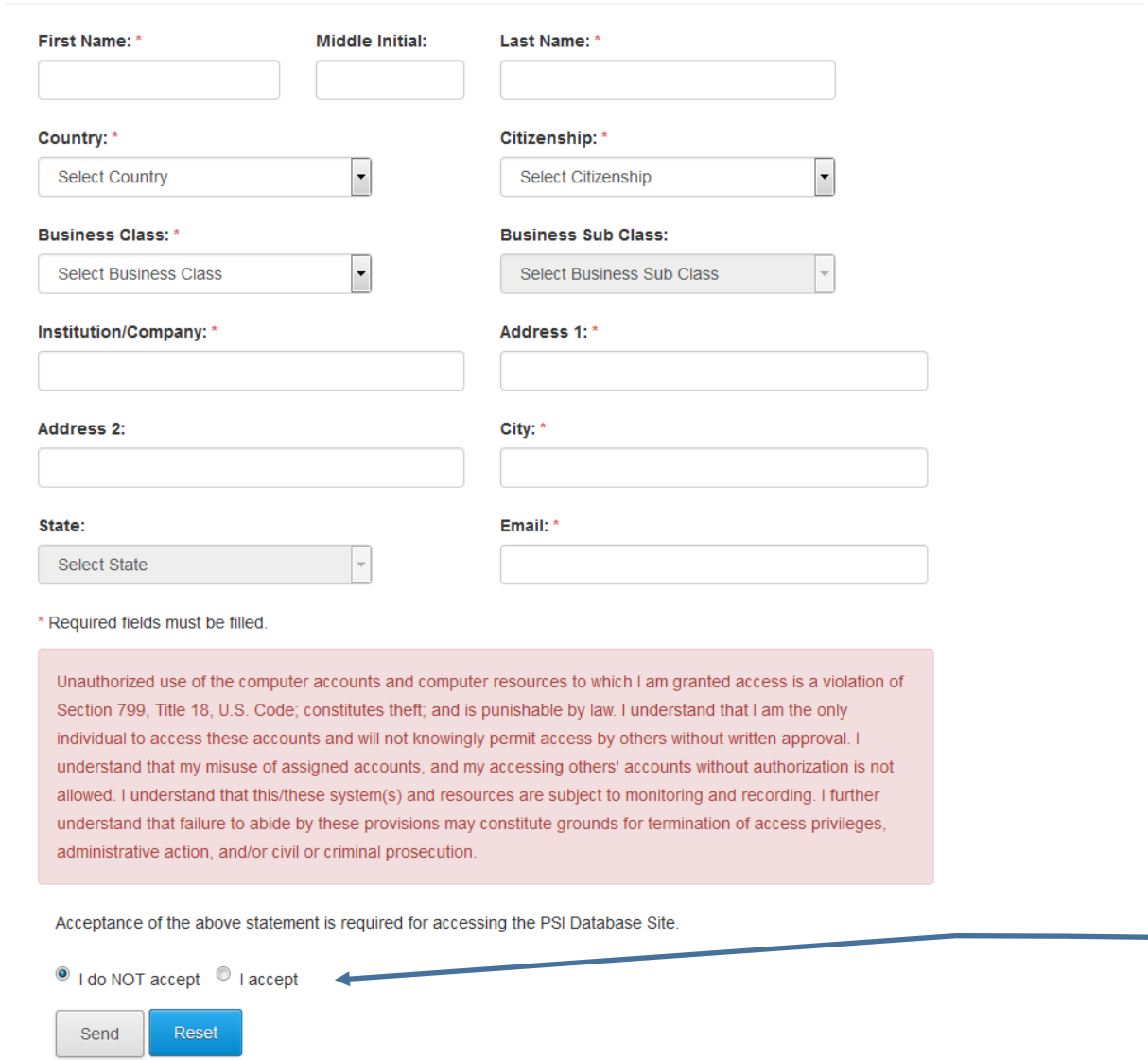
PSI Demo Screenshots



Click Register to request access to PSI

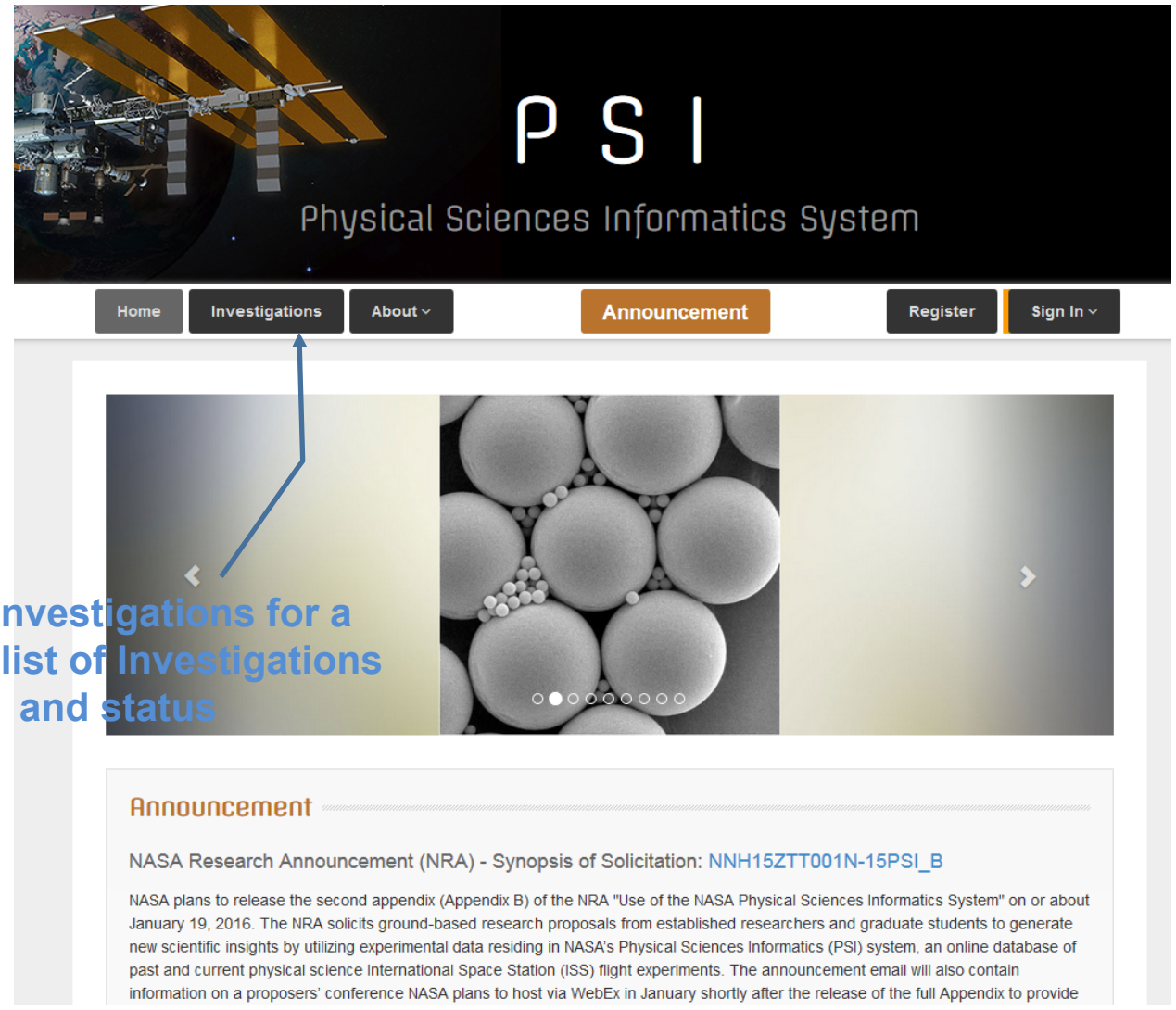
PSI Demo Screenshots



Fill in form, accept terms and conditions and click Send

New users will receive an email with login information

PSI Demo Screenshots



Click Investigations for a current list of Investigations and status

PSI Demo Screenshots

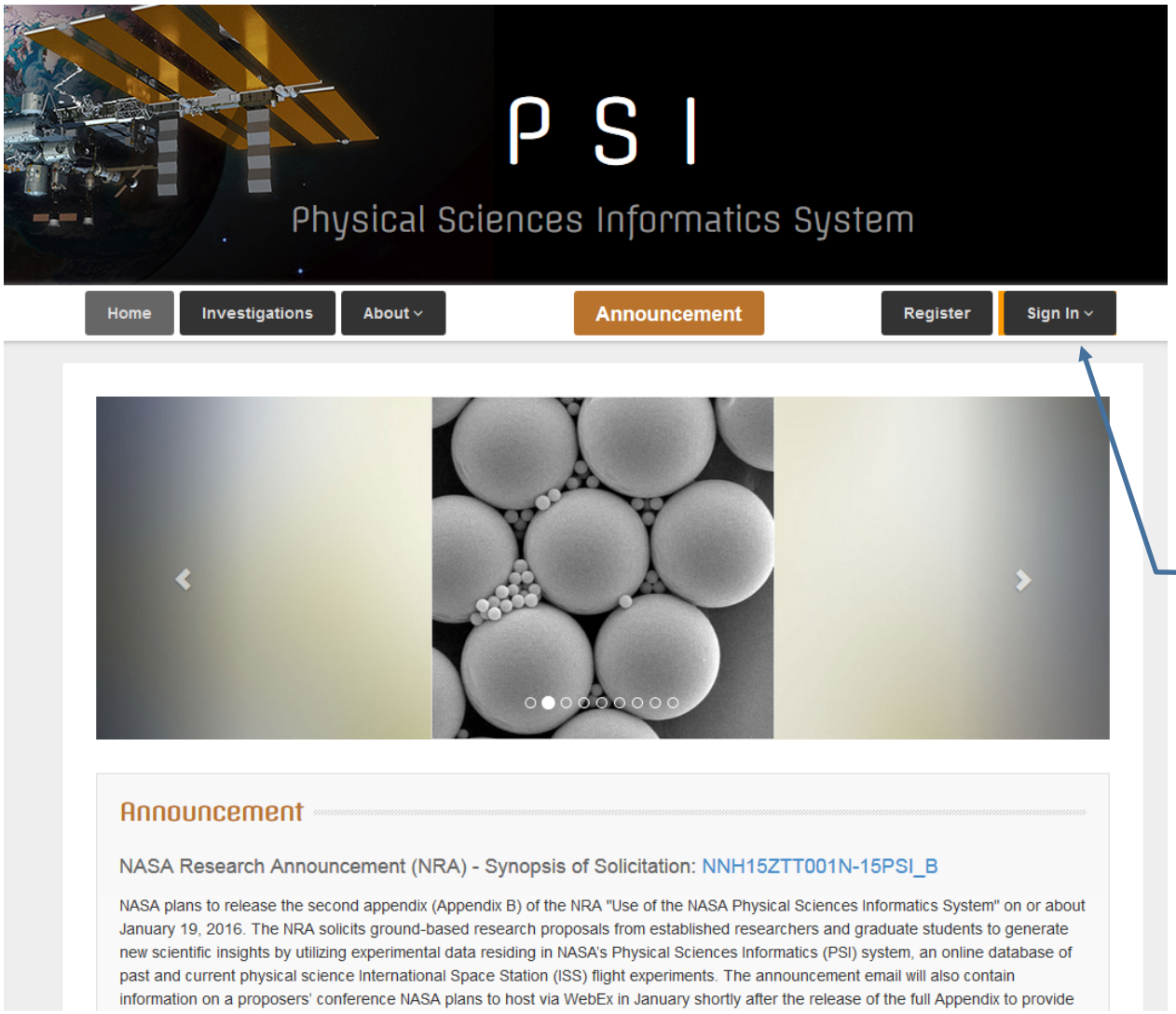
Investigations

Acronym	Title	Research Area	Completion Status	NRA Eligibility
BASS	Burning and Suppression of Solids	Combustion Science	Completed 2016	No
DAFT	Dust and Aerosol Measurement Feasibility Test	Combustion Science	Complete	Yes
DAFT-2	Dust and Aerosol Measurement Feasibility Test-2	Combustion Science	Complete	Yes
FLEX-1	Flame Extinguishment Experiment	Combustion Science	Complete	Yes
FLEX-2	Flame Extinguishment Experiment–2	Combustion Science	Completed 2016	No
SAME	Smoke Aerosol Measurement Experiment	Combustion Science	Complete	Yes
SAME-R	Smoke Aerosol Measurement Experiment Reflight	Combustion Science	Complete	Yes

1 2 3 4 5 6 7 ›

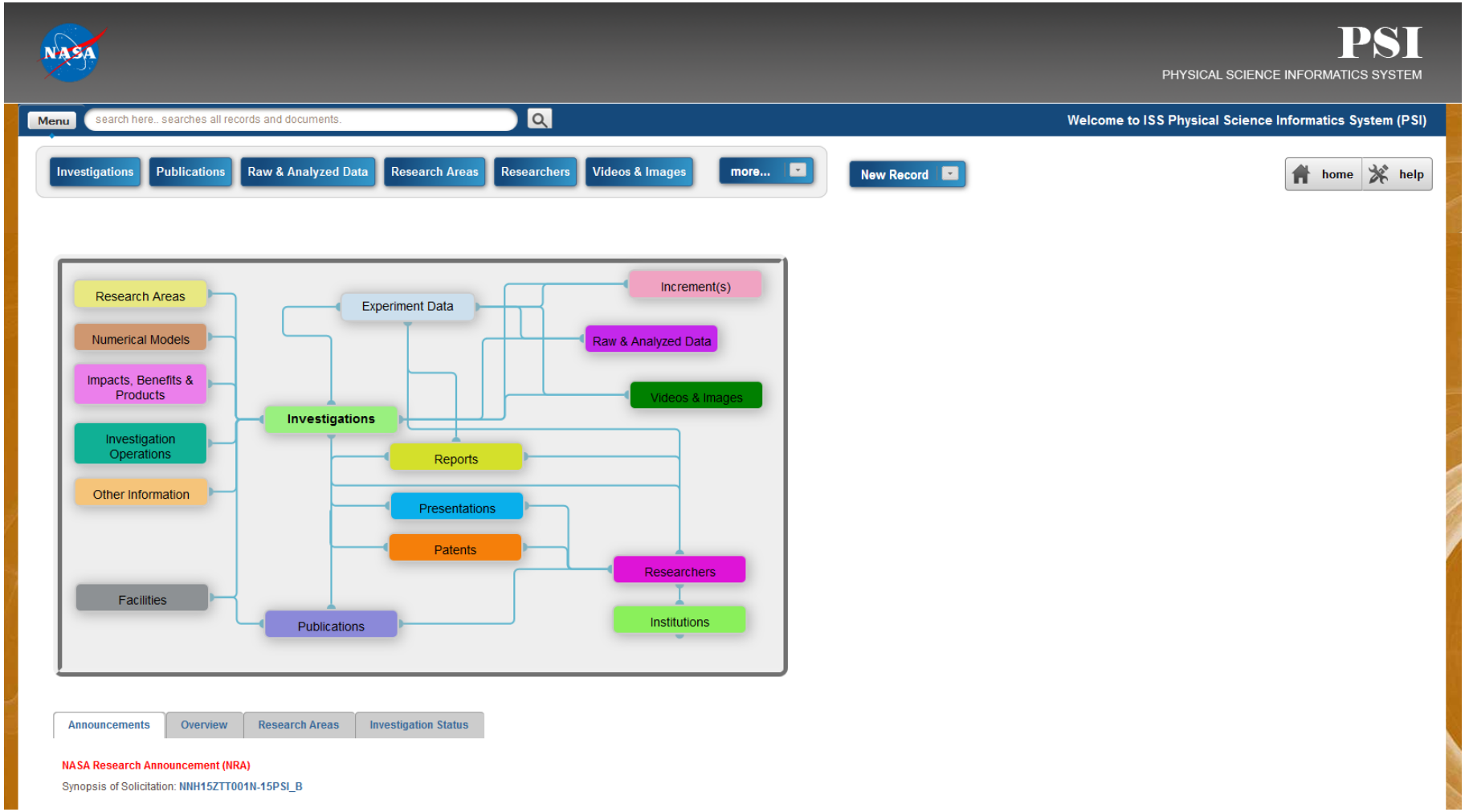
Page through Investigations by Research Area

PSI Demo Screenshots



Returning users click Sign In

PSI Demo Screenshots



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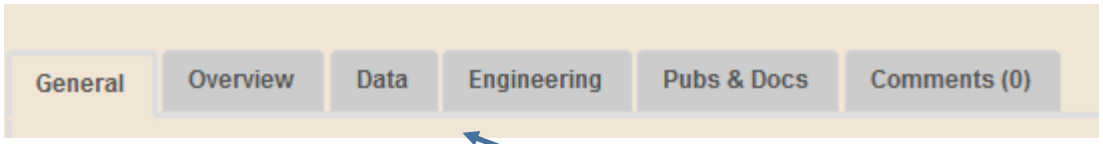
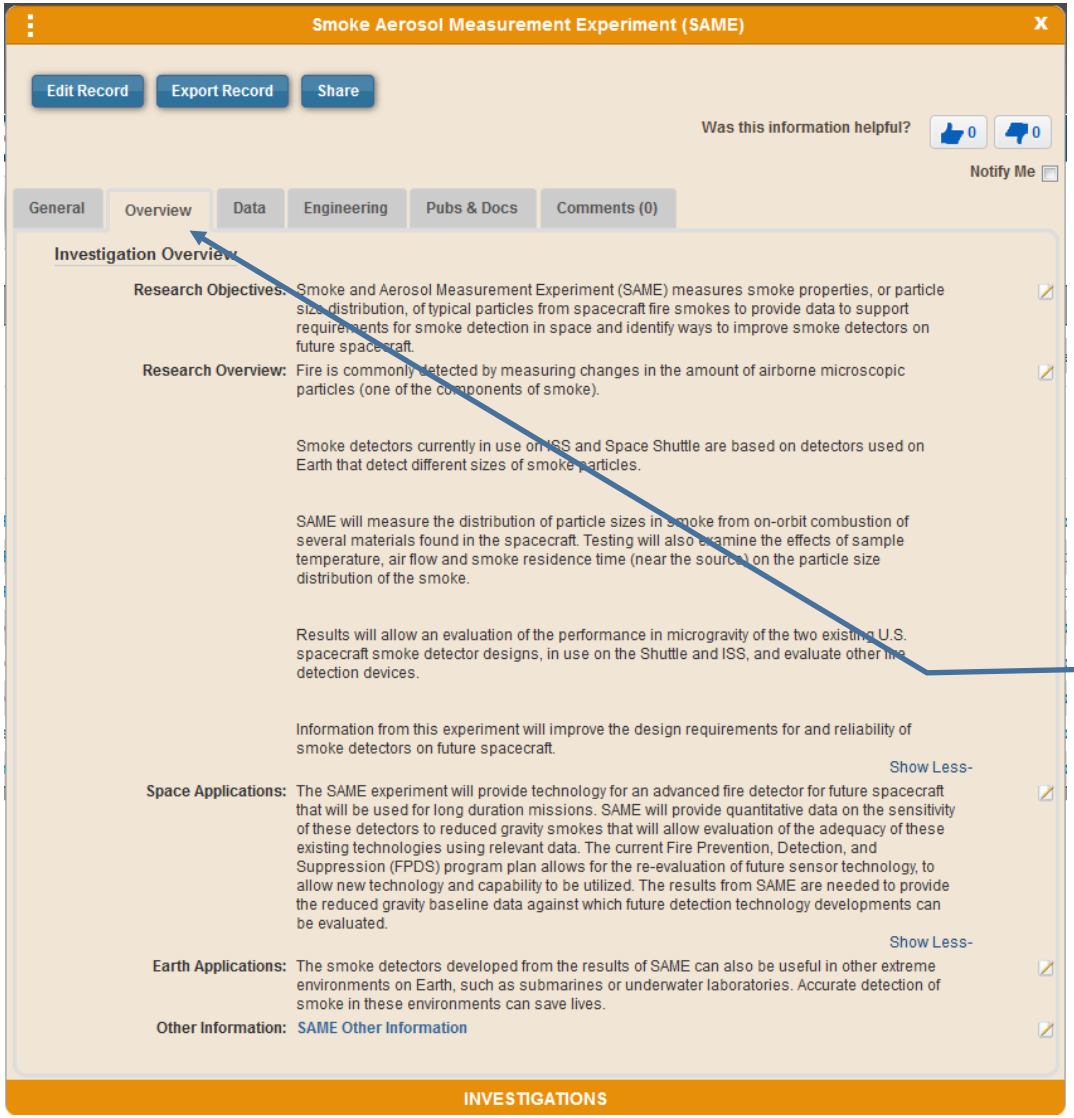


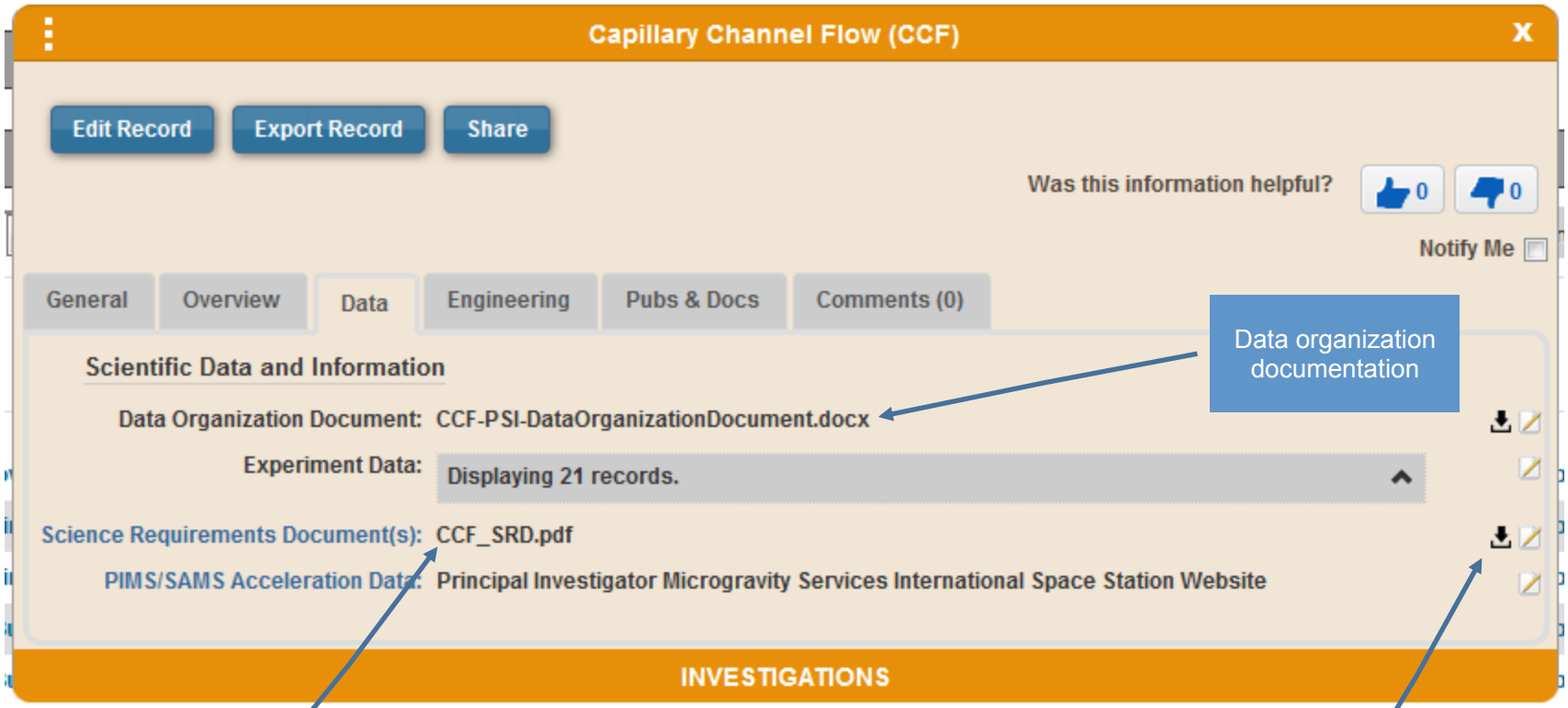
Tabs or data categories have different types of data on them. Click on the different tabs to navigate through the data within an investigation.

PSI Demo Screenshots



The Overview tab contains information about the general idea and objectives of the experiments within the investigation.

PSI Demo Screenshots

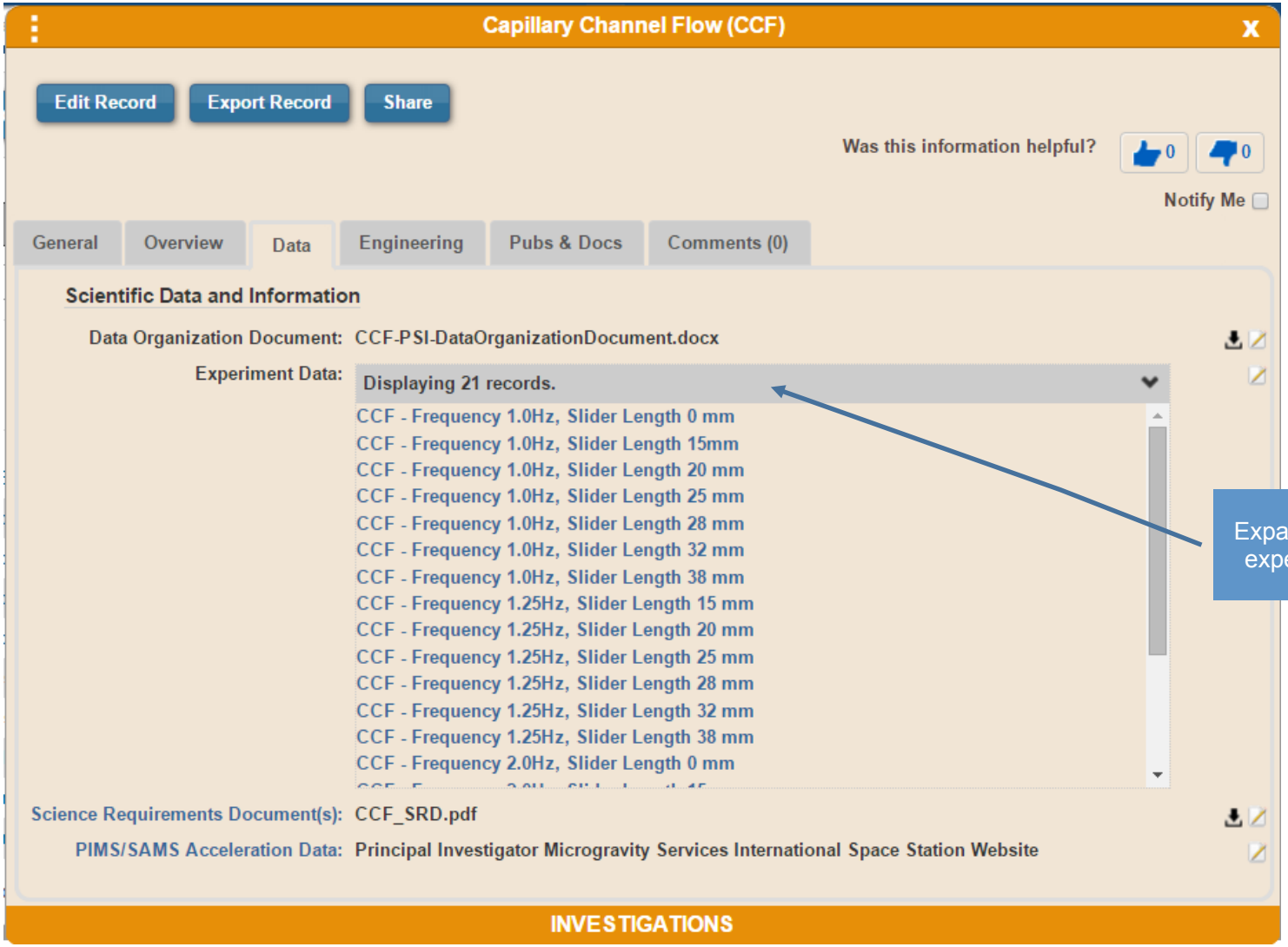


Data organization documentation

The SRD provides more in depth information about the experiment concepts.

Download document(s)

PSI Demo Screenshots



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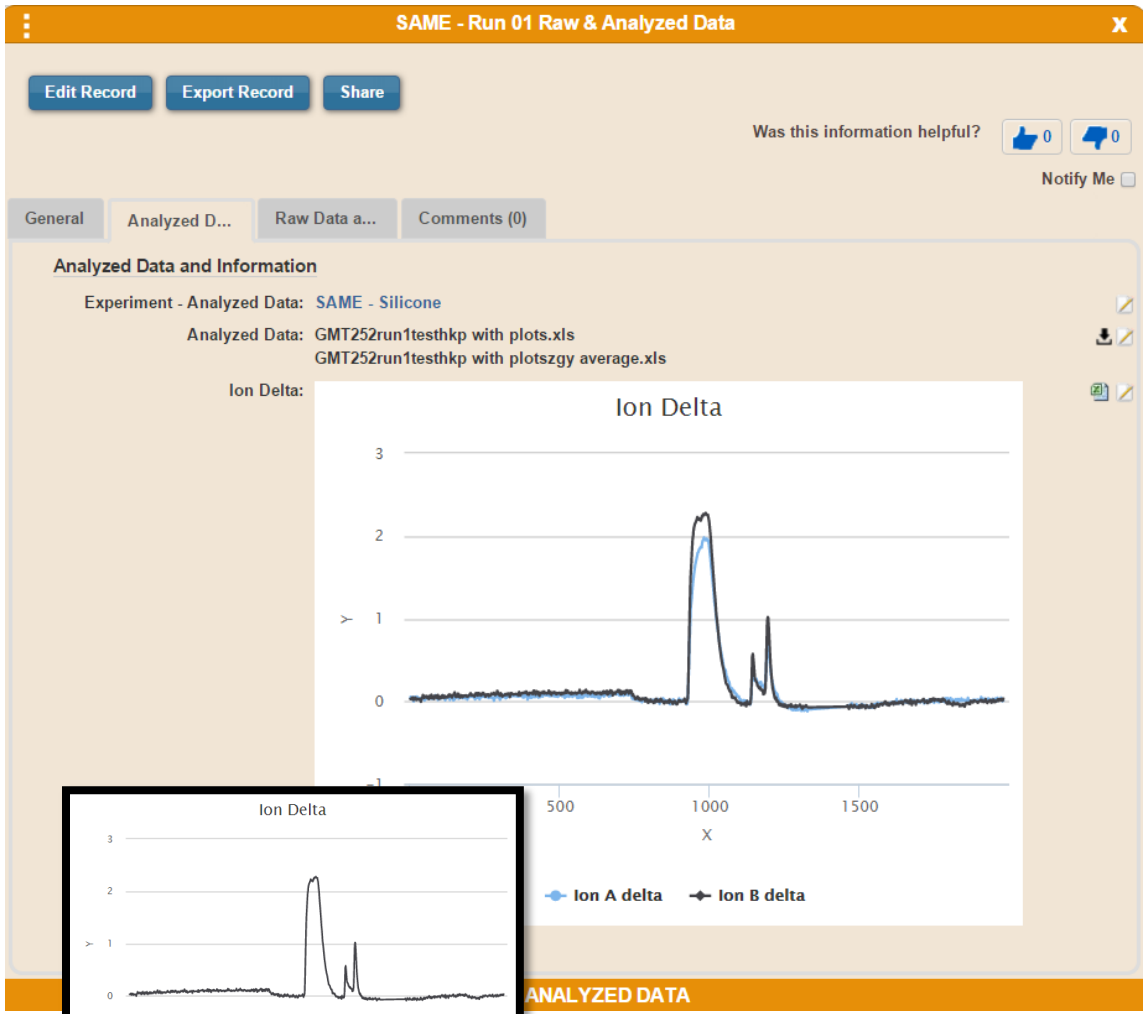
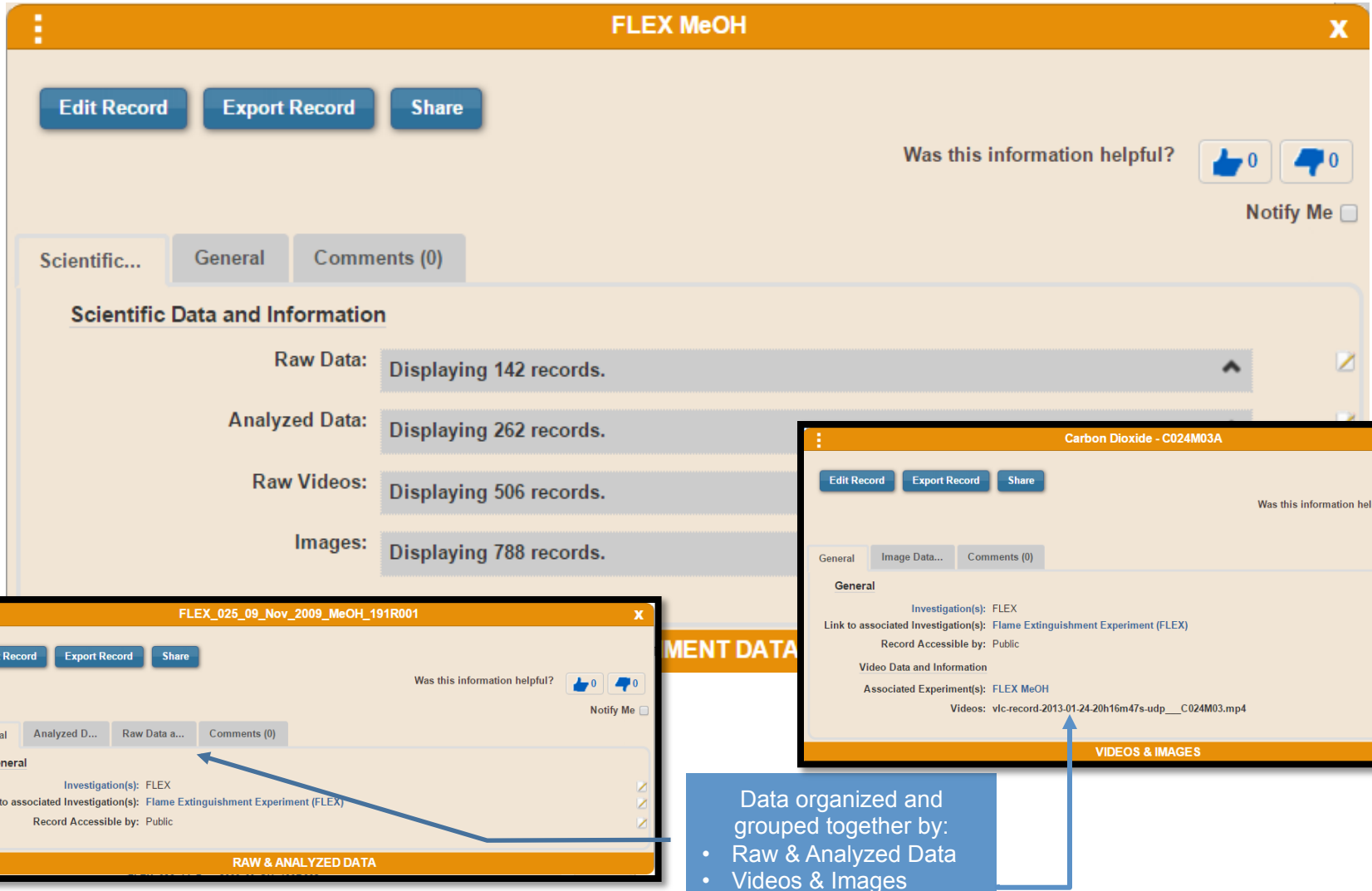


Analyzed data displayed in a plot. Plot attributes can be turned on/off.

PSI Demo Screenshots



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